ABSTRACT OF THE DISCLOSURE

Preferred embodiments of the invention include purification of DNA, preferably plasmid DNA, by use of selective precipitation, preferably by addition of compaction agents

Also included is a scaleable method for the liquid-phase separation of DNA from RNA. RNA may also be recovered by fractional precipitation according to the invention.

We have discovered that RNA, commonly the major contaminant in DNA preparations, can be left in solution while valuable purified plasmid DNA is directly precipitated. Endotoxin can also be kept to very low levels.

Additional aspects of the invention include mini-preps, preferably of plasmid and chromosomal DNA to obtain sequenceable and restriction digestible DNA in high yields in multiple simultaneous procedures.

Still further aspects disclose enhanced stripping pf the compaction agent by a stripping method comprising high salt addition and pH shift, and combinations of these techniques.

Also disclosed is a method of assay in which a labeled probe is precipitated by hybridizing it to a target, (e.g. chromosomal DNA, oligonucleotides, Ribosomal RNA, tRNA), and thereafter precipitating the probe/target complex with compaction agents and leaving in solution any unhybridized probe. For example, chromosomal DNA, plasmid, ribosomal RNA, and oligonucleotides

can be recovered in excellent purity; by then heating the mixture of nucleic acids and probe(above their melting temperature if the hybridization site is buried within secondary structure) and thereafter precipitating the probe and the target, whereby the target can be detected. Convenient kits for easy practice of the invention are also described..

RNA Abstract

Additionally, a new approach to the isolation of RNA from bacterial lysates employs selective precipitation by compaction agents, such as hexammine cobalt and spermidine.